

ABSTRACT OF THE DISCLOSURE

A method of depositing a film of a metal chalcogenide including the
5 steps of: contacting an isolated hydrazinium-based precursor of a metal
chalcogenide and a solvent having therein a solubilizing additive to form a
solution of a complex thereof; applying the solution of the complex onto a
substrate to produce a coating of the solution on the substrate; removing
the solvent from the coating to produce a film of the complex on the
10 substrate; and thereafter annealing the film of the complex to produce a
metal chalcogenide film on the substrate. Also provided is a process for
preparing an isolated hydrazinium-based precursor of a metal
chalcogenide as well as a thin-film field-effect transistor device using the
metal chalcogenides as the channel layer.

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